

SAFEGUARDING CALIFORNIA: PREPARING FOR CLIMATE RISKS

AN UPDATE TO THE 2009 CALIFORNIA CLIMATE ADAPTATION STRATEGY

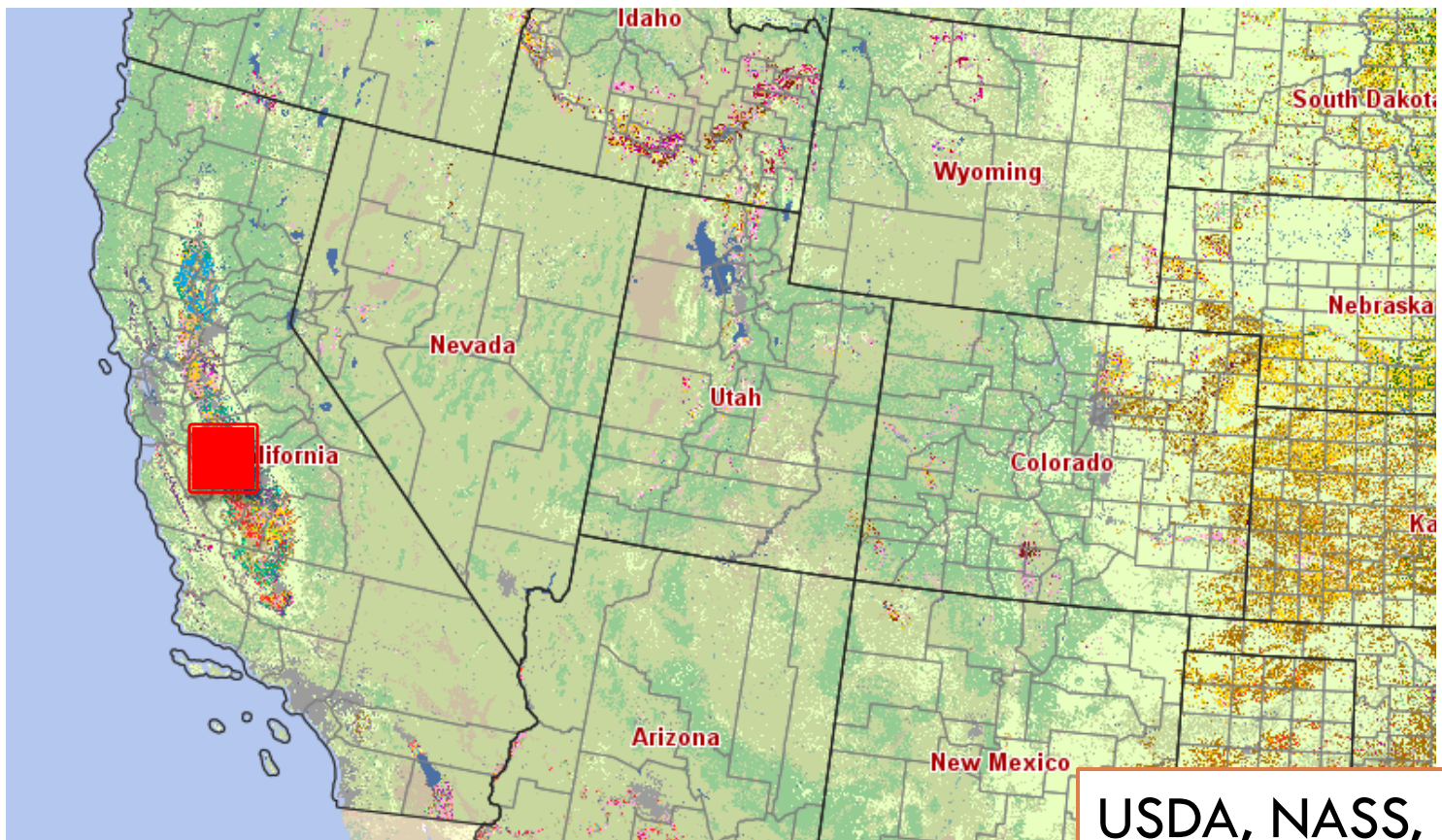
AGRICULTURE

Presentation Outline

- Agriculture in California
- Agriculture and Climate Change
- Climate Change Impacts
- CDFA Activities
- Importance of Adaptation Effort

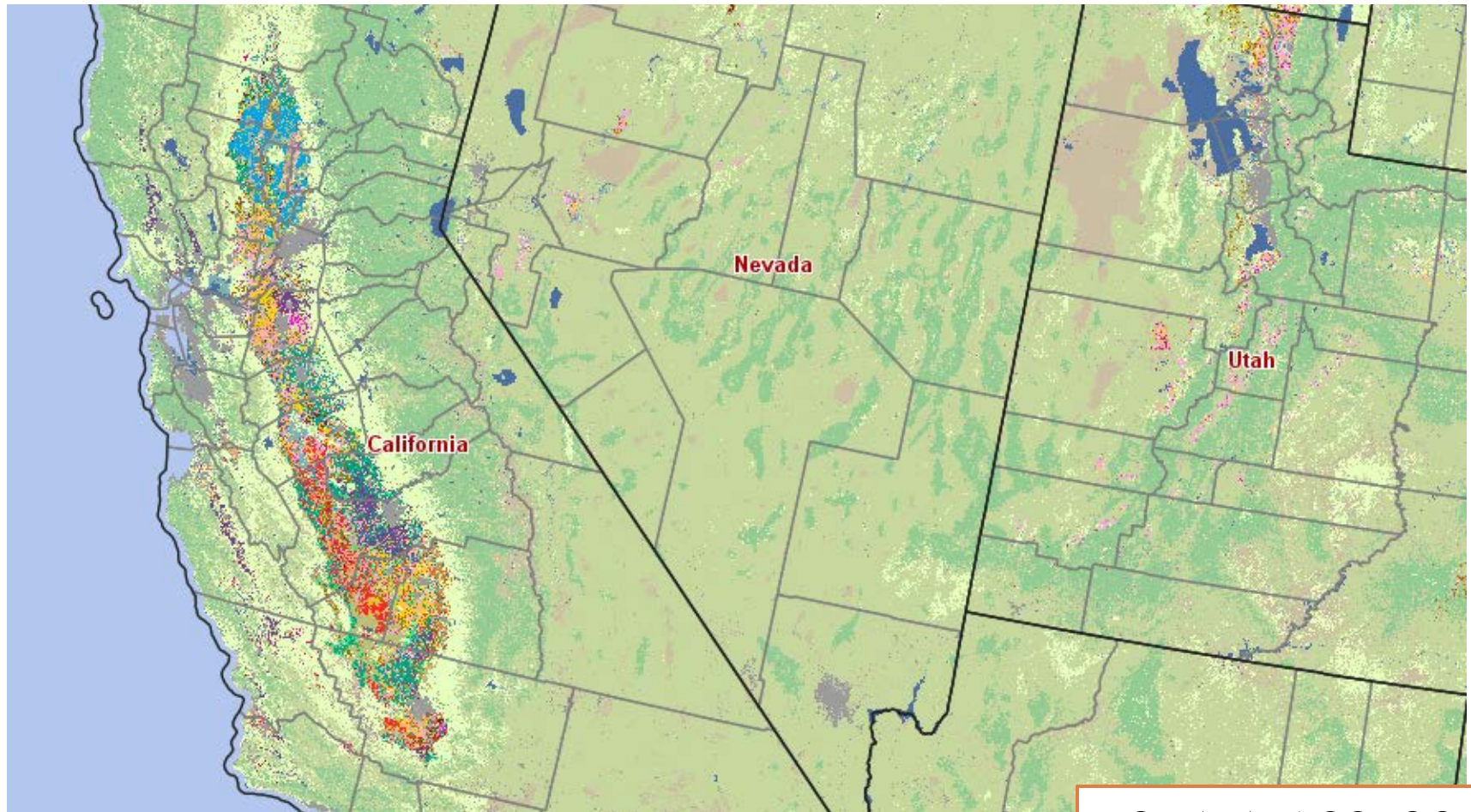
Agriculture in California

- Uniquely different from agricultural production in other states (e.g., lots of specialty crops)



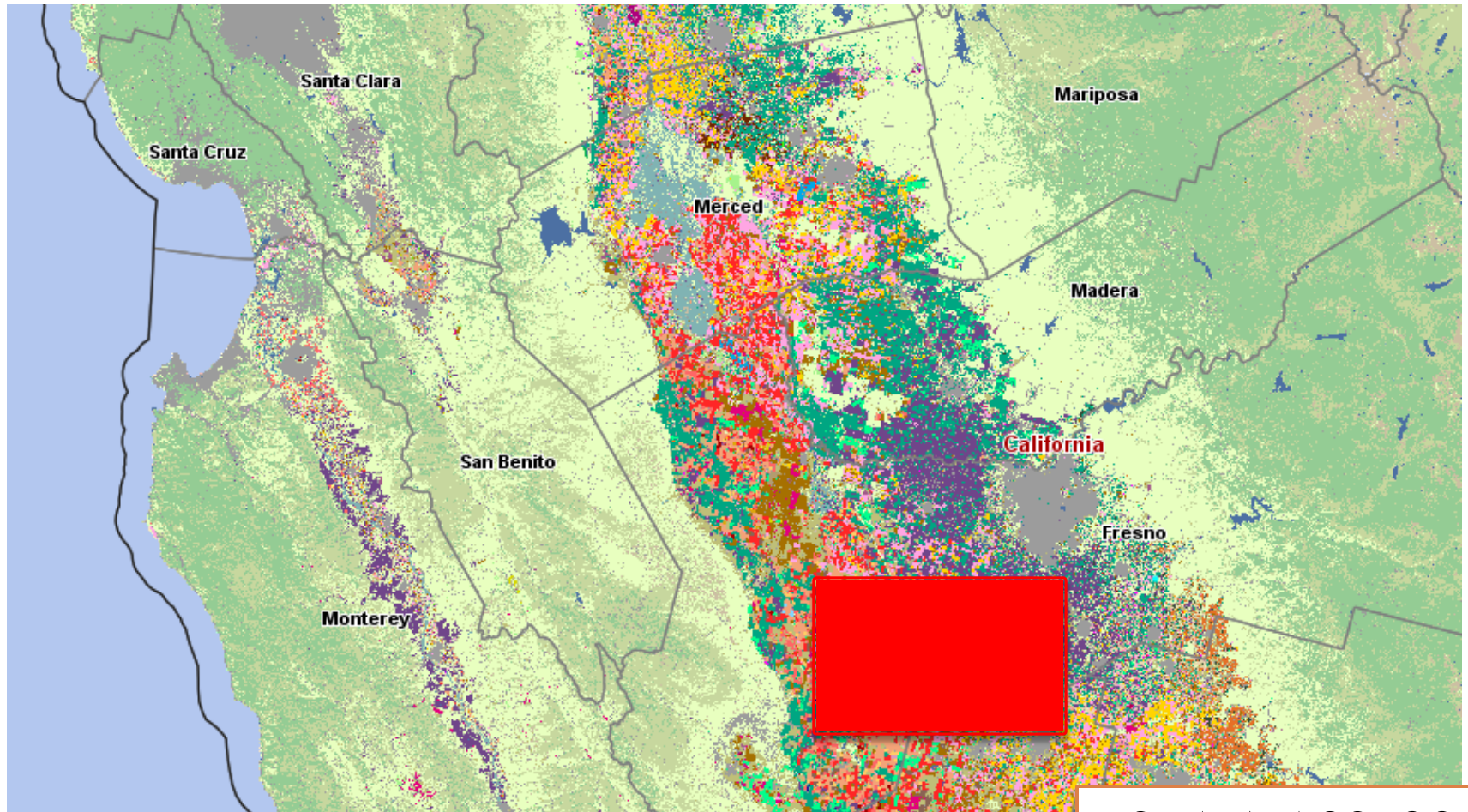
USDA, NASS, 2012

Agriculture in California



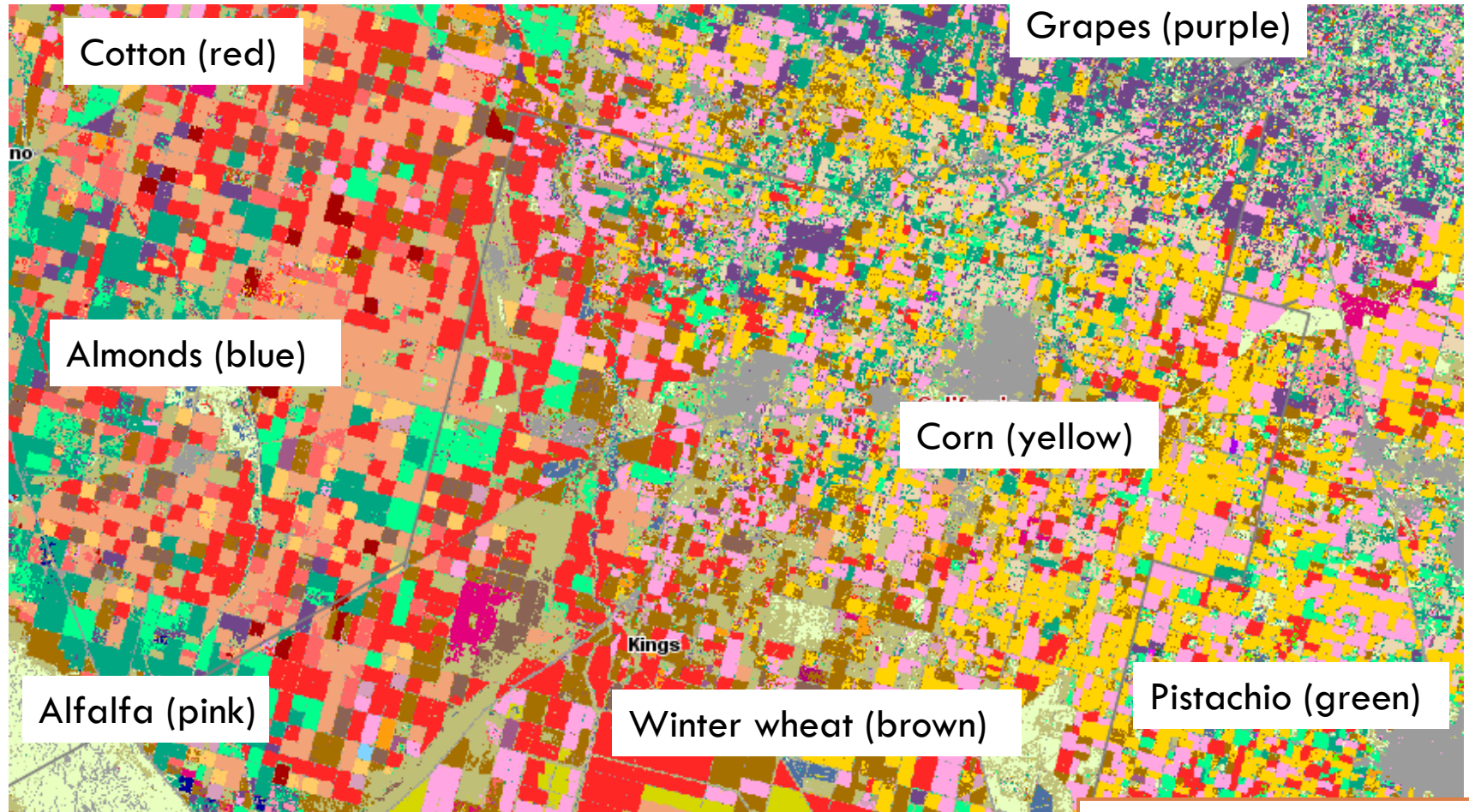
USDA, NASS, 2012

Agriculture in California



USDA, NASS, 2012

Agriculture in California



USDA, NASS, 2012

Agriculture in California

- Highly diverse (400+ different commodities)

- Specialty crops
- Non-specialty crops
- Animal agriculture

- Beef
- Eggs
- Milk
- Chicken
- Lamb
- Goat
- Cheese



Californiarice.org



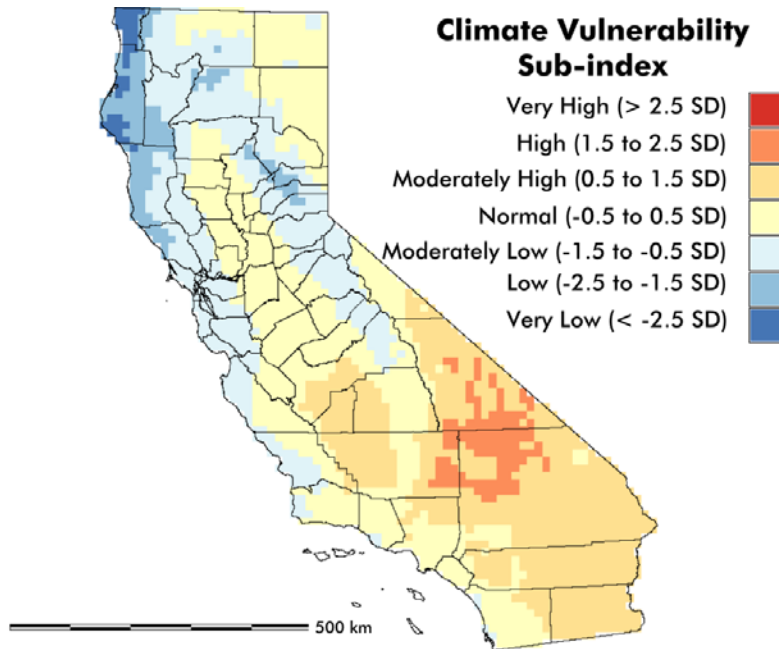
CDFA Ecosystem Services

Agriculture in California

- Large economic contributor to the state
 - ▣ Approximately 800,000 jobs
- Diversity of farm sizes
 - ▣ 81,700 farms
- Supports current and future populations (production over the entire year)
- Unique growing environments
 - ▣ Central Valley (tree crops)
 - ▣ Central Coast (vegetable crops)

Agriculture and Climate Change

- Scientific modeling shows impacts to agriculture

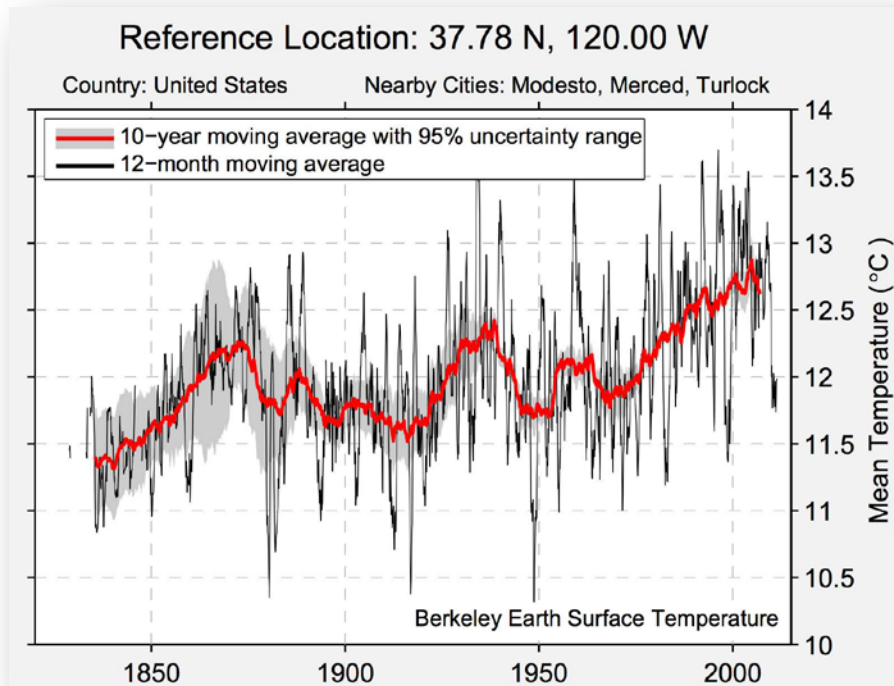


Jackson et al. *Vulnerability and Adaptation of Agriculture to Climate Change in California*.
CEC-500-2012-032

- Agricultural sector should prepare for climate change

Climate Change Impacts

- Temperature increases
 - ▣ Heat effects on plants and animal products



Ten-year moving average of temperatures in the San Joaquin Valley near Modesto, Merced, and Turlock shows temperature increases in recent years. (Berkeley Earth Surface Temperature, Anon 2013).

Climate Change Impacts

- Temperature increases
 - ▣ Heat effects on plants and animal products
 - Increased temperatures lead to reduced winter wheat yield

Mitchell et al. 1993. Plant, Cell and Environ. 16:521-529
 - Optimum milk production between 40 – 75 F
 - Summer of 2005 had record breaking heat in many parts of the northeast. Many dairy farmers in the region reported declines in milk production, declines in calving rates, and increases in costs for running fans and other cooling measures.

Climate and Farming.org

Climate Change Impacts

- Drought/Flooding
- Water supply changes

Drought in California is taking its toll on rangelands while causing a drop in honey production. The USDA recently declared most of the state a disaster area because of dry conditions, and reservoirs around the state are well below their average for this time of year.



September, 2103

Capital Press
The West's **Ag** Website



People drive down onto the lake bed to launch their boats from the shore of a receding Shasta Lake in Northern California. The lake is less than half full, according to the California Department of Water Resources. TIM HEARDEN/CAPITAL PRESS

Climate Change Impacts

- Spread of invasive pests and diseases
 - ▣ Increased temperatures allow greater range
 - Kadzu - invasive weed



CDFA Activities



- California Agricultural Vision
 - The State Board of Food and Agriculture released its report in December 2010.
 - Identified 12 major strategies for California agriculture along with specific objectives to address them.
 - Strategy 9: Assure Agricultural Adaptation to Climate Change
 - Objective: Assure that all sectors of California agriculture can adapt to the most likely climate related changes in seasonal weather, water supply, pests and diseases, and other factors affecting agricultural production

CDFA Activities

- Climate Change Consortium
 - CDFA convened a diverse group of individuals involved in California specialty crop agriculture in August 2012.
 - Objective was to identify specific climate change adaptation strategies for growers
 - The Consortium discussed creative solutions to be investigated and implemented at the level of individual growers and through regional and state planning processes.
 - Produced final report (to be released soon).

CDFA Activities

- Climate Change Consortium Final Report
 - Synthesis and summary of scientific information shared by experts in and outside of California who are working on climate change at the interface of agriculture.
 - Final report purpose is two-fold
 1. To provide growers, agricultural associations, specialty crop commodity groups, the general public, state agencies, and other agricultural stakeholders with examples of climate change impacts and potential adaptation strategies.
 2. It lists adaptation recommendations that CDFA will use for future climate change activities.

CDFA Activities

- Invasive Species Preparation and Response
 - The Invasive Species Council of California (ISCC) is an inter-agency council that helps to coordinate and ensure complementary, cost-efficient, environmentally sound state activities regarding invasive species.
 - In August 2011, the ISCC released its strategic framework – *Stopping the Spread*. This report includes a number of actions and five overarching conditions necessary to implement.

<http://www.iscc.ca.gov/docs/CISAC-Strategic-Framework.pdf>

Importance of Adaptation Effort



- Farmers and ranchers deal with change in weather on a regular basis
- Climate change events are outside the normal weather changes growers are used to dealing with
- Several on-going processes
 - ▣ Continued Research
 - ▣ Climate Change Consortium
 - ▣ Climate Change Adaptation Plan update

Importance of the Adaptation Effort



“there is a need for all agricultural communities to begin to develop adaptation plans that address the potential impact of changing climate, land use and economic factors. Adaptation measures for agriculture should be part of local planning activities.”

Jackson et al. 2012. CEC-500-2012-031
University of California, Davis



Thank You